

## **REMARKS**

Reconsideration of the application in light of the amendments and the following remarks is respectfully requested.

### **Status of the Claims**

Claims 1-14 are pending. Claims 1-4 and 13-14 have been amended. No new matter has been added.

Applicant submits that the amendments to claims 1-4 and 13 are minor in nature and recite the subject matter in better conformance with idiomatic English without narrowing the scope of the claims, and were not made for reasons of patentability.

### **Allowable Subject Matter**

Applicant appreciatively acknowledges the Examiner's indication of allowable subject matter in claims 4 and 10. Amended independent claim 14 now recites the features of dependent claim 4 and its base and intervening claims. Applicant submits that claim 14 recites allowable subject matter and is in condition for allowance.

### **Rejection Under 35 U.S.C. § 102**

Claims 1-3, 8 and 13-14 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,252,552 to Tarvas et al. ("Tarvas '552") Applicant respectfully traverses the rejection.

Independent claims 1, 13 and 14 recite "a radiating element galvanically isolated from the other conductive parts of the radio device." In contrast, Tarvas '552 discloses that "a galvanic contact must be provided between the ground coupling pad 1104 and the planar radiating element 1101 . . ." (Tarvas, column 6, lines 38-40.) Clearly, the cited reference does not disclose a galvanically isolated radiating element.

Further, claims 3 and 14 recite “a feed conductor which **galvanically connects said feed point to the antenna port**, and a ground conductor which electromagnetically connects the feed conductor to the ground plane at a point along the feed conductor.” (Emphasis added.) The Specification discloses that the ground conductor 421 is a meandering strip conductor which “expands into a small conductive pad PAD right next to the lower end of the meander pattern formed by the feed conductor. This way, the feed conductor 422 is at an intermediate point electromagnetically coupled to the ground conductor [421] which is ‘seen’ by the feed conductor as an inductive component grounded at the opposite end.” (Specification, page 4, line 27, through page 5, line 8.)

The Examiner relies on Tarvas ‘552, column 7, lines 14-16 as support for disclosing that “the antenna elements (1208) connect[] to the ground plane (1202) via [the] connecting block which includes the feed circuitry.” (Detailed Action, page 9.) The portion of Tarvas ‘552 relied on by the Examiner discloses that a feedpoint 1206 on the planar radiating element 1203 is connected to the antenna port 1209 through connector block 1207. Connector block 1207 also provides contact between ground contact 1208 and the ground plane 1202. (Tarvas ‘552, column 7, lines 9-16.) However, Tarvas ‘552 does not disclose, nor suggest, “a ground connector which electromagnetically connects the feed conductor to the ground plane,” as recited in claims 3 and 14.

Additionally, the Examiner contends that Tarvas ‘552 Fig. 13 discloses a feed circuit that is reactive and comprises inductors and capacitors in resonance. (Detailed Action, item 2, page 2.). Tarvas ‘552 Fig. 13 merely discloses an “equivalent circuit to illustrate the characteristics of a capacitive PIFA's feed.” A PIFA includes a feed electrode 104 which can be coupled to an antenna port of a radio apparatus (not shown), *see* Tarvas ‘552, Fig. 1 and column

1, lines 14-23. Details of the capacitive PIFA's feed are disclosed at column 6, lines 2-13 and lines 29-59, and Figs. 10, 11a and 11b. A planar radiating element 1101 is formed on a first surface of a printed circuit board. Coupling pads 1103, 1104 for feed and grounding are formed on a second surface of the same circuit board. Tarvas '552 discloses a feedpin 1108 soldered to a hole in the ground plane, but isolated from the ground plane. A ground contact 1109 is attached to the ground plane. In the equivalent circuit of Fig. 13:

Inductance 1305 **represents** the inductance of the feedline, or the line between the antenna port of the radio apparatus and the capacitively coupled feedpoint, capacitance 1306 **represents** the capacitance of the capacitive feed, inductance 1307 **represents** the inductance between the antenna feedpoint and ground contact, inductance 1308 **represents** the inductance of the PIFA element, and capacitance 1309 **represents** the capacitance between the open end of the PIFA element and ground plane.

(Tarvas '552, column 7, lines 22-30 (emphasis added).)

It is known by a person of ordinary skill in the art that an equivalent circuit is a representation of the impedance properties of a circuit, and not an actual circuit structure. Independent claims 1, 13 and 14 recite "the feed circuit includes a reactive component." In contrast, Tarvas '552 merely discloses that a PIFA's feed has characteristics that include capacitive and inductive elements. Applicant submits that Tarvas '552 discloses the feed elements of a PIFA (*i.e.*, feedpin 1108 and ground contact 1109), while a feed circuit is a portion of the transmission line which connects the antenna (at its feed point) to the radio device antenna port output. Thus, Tarvas '552 does not disclose "a feed circuit that couples the antenna feed point to an antenna port of the radio device," as recited in claim 1.

For the reasons discussed above, Applicant submits that Tarvas '552 does not disclose each and every feature of claims 1-3, 8 and 13-14. Therefore, Tarvas '552 does not anticipate claims 1-3, 8 and 13-14. Reconsideration and withdrawal of the rejection is requested.

### **Rejection Under 35 U.S.C. § 103**

Claims 5-7, 9 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tarvas ‘552 in view of U.S. Patent No. 6,469,673 to Kaiponen. Applicant respectfully traverses the rejection.

The Examiner relies on Kaiponen as disclosing: a radiating element which follows the surface shape of a radio device; a radiating element that is a rigid conductive piece belonging to a radio device cover; and an antenna attached to the non-conductive portions of a radio device. The Examiner contends that the combination of Tarvas ‘552 and Kaiponen results in the claimed invention. However, Kaiponen neither discloses nor suggests those features of dependent claims 5-7, 9 and 11 demonstrated above to be missing from Tarvas ‘552 with respect to their base claim. Therefore, Applicant submits that the combination of Tarvas ‘552 and Kaiponen neither discloses nor suggests the invention of claims 5-7, 9 and 11. Thus, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness. Reconsideration and withdrawal of the rejection is requested.

Claim 12 has been rejected as being unpatentable over Tarvas ‘552 in view of U.S. Patent No. 6,759,989 to Tarvas et al. (“Tarvas ‘989”).

The Examiner relies on Tarvas ‘989 as disclosing placement of a parasitic element to improve an upper operating band. The Examiner contends that the combination of Tarvas ‘552 and Tarvas ‘989 results in the claimed invention. However, Tarvas ‘989 neither discloses nor suggests those features of dependent claim 12 demonstrated above to be missing from Tarvas ‘552 with respect to its base claim. Therefore, Applicant submits that the combination of Tarvas ‘552 and Tarvas ‘989 neither discloses nor suggests the invention of claim 12. Thus, the

Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness. Reconsideration and withdrawal of the rejection is requested.

**CONCLUSION**

Each and every point raised in the Office Action dated August 29, 2005 has been addressed on the basis of the above amendments and remarks. In view of the foregoing it is believed that claims 1-14 are in condition for allowance and it is respectfully requested that the application be reconsidered and that all pending claims be allowed and the case passed to issue.

If there are any other issues remaining which the Examiner believes could be resolved through a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

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Respectfully submitted,



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